Progress Report 2010

ENERGY STRATEGY FOR YUKON

Yukon Government

Energy Strategy for Yukon - Progress Report 2010

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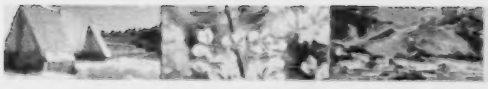


Introduction

In January 2009, the Government of Yukon released the Energy Strategy for Yukon. The Energy Strategy provides a vision for how energy will be produced, conserved and used in Yukon.

The Energy Strategy focuses on four priorities:

1. Conserving and using energy more efficiently;
2. Increasing the supply and use of renewable energy;
3. Meeting current and future electricity needs; and
4. Managing responsible oil and gas development.

The Government of Yukon committed to monitor the implementation of the Energy Strategy and to report regularly on progress. This progress report provides the status of the 24 priority actions.

The Energy Strategy lays out the following vision and principles.

Vision

Yukon will have a sustainable and secure energy sector that is environmentally, economically and socially responsible; developing and using energy resources to meet Yukon's energy needs and generate benefits for Yukon people, both now and for generations to come.

Principles

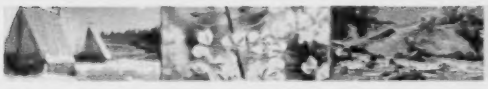
Sustainability: developing an energy sector that is environmentally, economically and socially sustainable for present and future generations.

Energy security: ensuring a secure and reliable supply of energy at a reasonable cost and reducing dependence on non-renewable energy sources.

Self-sufficiency: promoting the environmentally, economically and socially responsible development and use of Yukon's energy resources.

Optimize benefits: optimizing socio-economic and environmental benefits and opportunities for Yukon from energy development, conservation and use.

Climate change coordination: coordinating climate change and energy policies and identifying opportunities to reduce greenhouse gas emissions.



Leadership: demonstrating Yukon government leadership in responsible energy management, including research and innovation, infrastructure development, efficiency and conservation.

Partnerships: engaging individuals, private sector, First Nations, municipalities, the federal government and non-government organizations in developing and managing energy resources.

These principles are taken into account whenever energy decisions are made to ensure our vision is supported.

Energy Priorities

The Energy Strategy describes the government's priorities to improve energy efficiency and conservation, produce more renewable energy, meet electricity needs, develop oil and gas responsibly and make good energy choices. Under each priority there are specific actions that the Government of Yukon has committed to implement over the ten year life of this Energy Strategy. The following pages highlight the progress made on the priority actions since the Energy Strategy was released in January 2009.

Efficiency and Conservation

Over the last two years, all Yukon government departments have been working to realize efficiency and conservation priority actions that will reduce energy consumption, costs and emissions.

For example, the Department of Highways and Public Works made significant strides to improve government building and vehicle fleet standards, and adopted a green procurement policy. The Yukon Housing Corporation offered a suite of training and has encouraged energy efficient building and retrofitting. The Energy Solutions Centre continues to research new technologies and offer incentives for the purchase of energy efficient products. Energy, Mines and Resources (EMR) and Community Services are meeting energy efficiency and conservation priority actions around transportation through investments in agriculture, research in the transportation sector, and commercial vehicle owner training.

Following are the actions taken to meet the priorities for efficiency and conservation:

Increase energy efficiency in Yukon by 20% by 2020.

- Highways and Public Works' Property Management Division is:
  - examining energy efficiency lighting upgrades in Yukon government buildings
  - reviewing energy monitoring software options from various manufacturers
  - installing energy meters in selected Whitehorse schools to monitor energy usage
  - requiring fuel suppliers to provide monthly electronic fuel use data to develop baseline information on energy use and efficiency.

Reduce energy consumption in Yukon buildings.

- Yukon Housing Corporation has offered the following training since the Energy Strategy was released in 2009:
  - commercial and self building energy auditing
  - oil fired appliances efficiency
  - residential mechanical ventilation and design
  - building science
  - Tekmar Boiler controls and Riello oil burner maintenance
  - inspector, energy and ventilation advisor
  - home energy efficiency for homeowners in partnership with the City of Whitehorse
  - breakfast seminars on Super Green Construction.

- Yukon Housing Corporation has also:
  - offered low interest loans in 2009/10 for home repairs. $2.6 million in home repair loans is available at 2.4% for 2010/11
  - offered education, information, technical support and advice on SuperGreen energy efficiency and building SuperGreen homes
  - was involved in the construction of 140 new housing units to SuperGreen home standard including a Super Green Home 6-plex with the Kwanlin Dün First Nation, and a super-insulated 3-plex with Habitat for Humanity
  - installed electronic performance monitoring equipment on five of its single family and multi residential buildings
  - has put in place a building performance monitoring and data collection partnership with Yukon College to develop baseline data on energy consumption and efficiency.

- Enhanced energy monitoring meters were installed in Hidden Valley, Holy Family, and Selkirk elementary schools in partnership with the Department of Education and the Property Management Division.

- The Energy Solutions Centre is monitoring an air source heat pump pilot project.

Reduce energy consumption for transportation in Yukon.

- EMR is investing in agriculture infrastructure to support production of Yukon grown food.

  Program funding under the Canada-Yukon Growing Forward Agreement supports increased local food production and, in turn, reduced energy consumption for food transportation. The Agreement provides an average of $978,000 annually of funding until 2012-13 on a cost shared basis. Specific funding has been used to:
  - Assist community markets in Dawson City and Whitehorse.
  - Provide training opportunities.
  - Purchase specialized farm equipment.
  - Fund projects to increase farm productivity.
  - Fund efficiency upgrades on irrigation systems.

➢ The Energy Solutions Centre is assessing options for hybrid/plug-in electric vehicles and the implications of large-scale adoption of this technology for our current electrical grids.
➢ The Motor Vehicles Branch, in collaboration with Natural Resources Canada, offers training regularly to assist licensees of commercial vehicles in achieving greater fuel efficiency.
Promote the use of energy efficient products by providing rebates for products that meet energy performance standards.
➢ The 2009/10 Good Energy program had 1,150 successful applicants (approximately 9% of Yukon households) receiving rebates for 1,071 appliances, 211 heating appliances (including 33 heat recovery systems), and 106 boat motors. The preliminary results for 2010/11 rebates are 746 appliances, 156 heating appliances and 61 boat motors.
Improve energy efficiency for Yukon government operations.
➢ Energy efficiency standards are being implemented. All new Yukon government buildings are expected to be LEED certified. A new F.H. Collins Secondary School is being designed with the goal of achieving LEED certification.
➢ Vehicle fuel efficiency and standards are in place for the Government of Yukon. Older fleet vehicles are continually phased out and replaced with higher fuel-efficient vehicles.
➢ The Government of Yukon adopted a green procurement policy in June 2010. The policy will influence how the government makes purchasing decisions for goods, construction and services.
➢ A review of best practices and current environmental stewardship practices in Yukon schools was carried out by the Department of Education. From the recommendations of that review, an Environmental Stewardship Coordinator began in the fall 2010 to plan strategies to reduce the ecological footprint and celebrate stewardship activities in Yukon schools. In addition, 50% of the old lighting at Selkirk Elementary School and 100% of the old lighting at Christ the King Elementary School was replaced with energy efficient bulbs and ballasts.

Renewable Energy

Energy production from renewable sources is a priority to reduce fossil fuel use and greenhouse gas emissions.

The Government of Yukon on a variety of fronts is promoting renewable energy. There are numerous pilot studies detailed below for wood fuelled heating systems, district-heating systems, and for solar powered projects that will help enhance Yukon's use of renewable energy.

Renewable energy sources also continue to be promoted through the Good Energy Rebate Program, and policy frameworks are under development for geothermal energy and bioenergy. All of this work will help Yukon reach its target to increase its renewable energy supply by 20% by 2020.

Following are the actions taken to meet the priorities for renewable energy:

Increase renewable energy supply in Yukon by 20% by 2020.
➢ The Energy Solutions Centre continually explores, assesses and monitors renewable energy production in Yukon to calculate how Yukon will meet the 20% increase in renewable supply by 2020. ESC is currently calculating the baseline for renewable supply to ensure this target is met by 2020.
➢ Yukon Energy Corporation continues to investigate a range of future renewable supply options including the potential for wind, geothermal, and new hydroelectric generation. • The Aishihik third turbine and Mayo B projects will increase Yukon Energy Corporation's renewable generation capacity by 22% by enhancing existing hydro generation infrastructure. • A number of improvements to existing hydro infrastructure that will increase efficiency and provide more generation capacity are being investigated.
Develop a policy framework for geothermal energy.
➢ Preliminary background/cross-jurisdictional research and scoping is underway, which includes a geothermal workshop that was held from March 10-11, 2010 (Exploring the Potential for Geothermal Energy in Yukon) hosted by the Yukon Geological Survey.

Support and demonstrate renewable energy projects (wind, hydro, solar, wood, or geothermal) in communities off the electrical grid to reduce diesel use.

- The Energy Solutions Centre is:
  - working with the Town of Watson Lake to install a 5KW photovoltaic system for the Northern Lights Space and Science Centre. This system will help to meet the electrical load of the building, and with real time monitoring and display, it will also serve as a public educational tool to inform the public of the benefits of solar electric technologies in the north.
  - planning to install a photovoltaic monitoring system at a new 14 KW installation in Old Crow. This system will report on the effectiveness of photovoltaic technologies in the extreme climatic conditions of Old Crow.
  - partnering with Yukon Energy Corporation to offer a wind monitoring service for off-grid residential customers who want to assess the wind regime at their location before making decisions to purchase a wind generation system.

Conduct pilot studies to assess the feasibility of renewable energy initiatives.

- For projects regarding new or expanded district heating systems, the Energy Solutions Centre is working with:
  - the Town of Watson Lake to assess the potential for expanding the existing district heating system in the community. This is a system that uses waste heat from the diesel-electric generating plant in the community. While this is not strictly a renewable source, it is focused on improving the efficiency of the existing system.
  - the Property Management Division and the City of Whitehorse, and has completed a pre-feasibility study to map energy intensity and assess the feasibility of district heating in downtown Whitehorse.

- The Energy Solutions Centre is working with the Little Salmon Carmacks First Nation to commission and implement the use of a new solar powered irrigation system for its community garden.

- The Property Management Division is proceeding with a pellet boiler system for the new Whitehorse Correctional Centre.

➢ The Energy Solutions Centre, working with the Property Management Division, completed the pre-design work that will be required to make future decisions about whether to re-commission the fluidized bed gasifier at Yukon College, which is a bioenergy heating system that also offers significant research potential.
➢ The Property Management Division is working with the City of Dawson to install a biomass boiler. This installation will use wood chips produced by the local sawmill from the residual wood generated by their rough sawn lumber production. The system will heat the new wastewater treatment plant, the existing reservoir pump house, and the City of Dawson's potable water system.
Promote renewable energy sources for heating and transportation.
➢ The Government of Yukon's Good Energy program offers rebates for wood stoves, wood pellet boilers and solar domestic hot water systems to promote renewable energy sources for heating.
➢ Recent projects to install solar electric power systems by the Energy Solutions Centre have included training and technical assistance to build local skills for renewable energy production. Projects include installing solar panels on the Energy Solutions Centre office, the main Yukon government building, the new Northern Research Institute lab facilities, as well as offices in Carmacks, in Watson Lake and in the near future in Old Crow.

Electricity

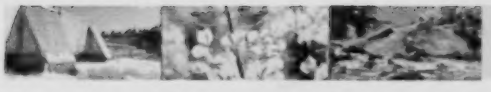
Increasing the electricity supply while managing demand is a priority of the Energy Strategy in order to meet Yukon's current and future electricity needs. Since the Energy Strategy was approved, significant resources have been directed towards increasing the capacity of the existing hydroelectric generation and transmission infrastructure in Yukon, while strategically researching new renewable sources of electricity. The implementation of a new independent power production policy, net metering policy, and demand side management plan will help Yukon meet these electricity objectives.

Following are the actions taken to meet the priorities for electricity under the Energy Strategy:

Support strategic investments in infrastructure to increase the supply of electricity from renewable sources through the enhancement of existing hydroelectric infrastructure.
➢ The federal and Yukon governments have committed funding for the Mayo B hydro enhancement project to increase the capacity of the Mayo hydro plant and the completion of the Carmacks-Stewart transmission line, which will connect Yukon's two hydro grids. The Carmacks-Stewart transmission line is expected to be completed by May 2011, and the Mayo B project is expected to be completed in late 2011 or early 2012.
➢ The Yukon Energy Corporation is studying potential options which would increase the amount of available water for winter hydro production at its Whitehorse and Aishihik facilities, and the corporation continues to assess the potential of new or greenfield developments and energy storage options needed to integrate renewable energy into Yukon's existing hydro grids for development in 2020 or later.
➢ $5 million in federal eco funding was allocated by the Government of Yukon to the Aishihik 3rd turbine project, which is currently under construction and is expected to be completed in 2011.
➢ The Yukon Development Corporation and the Yukon Energy Corporation continue to investigate geothermal potential of several sites throughout Yukon. Wind monitoring activities continue and will focus on two study sites (Ferry Hill near Stewart Crossing and Mt Sumanik near Whitehorse).

Assess the feasibility of expanding the Yukon transmission system to connect to other communities, industrial projects or jurisdictions.
➢ The Carmacks-Stewart transmission line is expected to be completed by May 2011. ➢ The Yukon Energy Corporation is in discussion with potential mining customers about the feasibility of providing grid electricity to new mines. The corporation will also continue to explore the potential for grid expansions within Yukon and with interested neighboring jurisdictions such as BC and Alaska.
Update and develop a policy framework for electricity that emphasizes efficiency, conservation and renewable energy.
➢ Consultation on an independent power production and net metering discussion paper took place between November 2009 and February 2010. A joint government/utilities working group is drafting an independent power production policy and a net metering policy for public review.
Develop and implement demand management programs and incentives to promote energy efficiency and conservation.
➢ A joint Yukon government/utilities working group is examining the opportunities for demand side management in Yukon.
➢ Energy efficiency and conservation is promoted through the Energy Solutions Centre's Good Energy rebate program. In 2009/10, a total of 27 rebates were accepted in Yukon communities which use diesel generators to produce electricity. The increased efficiency of these appliances represents an estimated energy savings of 13,000 kWh/year. This energy savings represents an offset of 10.4 tonnes of Equivalent Carbon Dioxide (CO_{2e}).
➢ The utilities, in partnership with the Energy Solutions Centre, are conducting pilot projects in Whitehorse and Dawson City to test LED streetlights for the winter 2010/2011. These studies will help determine the viability of this technology in the North.
Support research and development of technologies and policies to optimize the use of hydroelectricity.
➢ The Yukon Energy Corporation is investigating system improvements that would reduce transmission line losses and improve efficiency of existing hydro facilities.

Consider appropriate roles, responsibilities, and corporate structure for Yukon Development Corporation and Yukon Energy Corporation to ensure effective management and operation, and optimize the efficiency and reliability of electricity generation and distribution.
➢ Yukon government works in partnership with the Yukon Development Corporation and the Yukon Energy Corporation to optimize the effective management of Yukon's electrical resources.



Oil and Gas

The responsible development of oil and gas resources in Yukon is a priority to ensure these resources are available for local use as well as for export.

EMR's Oil and Gas Branch is strategically developing opportunities for Yukon's oil and gas resources through oil and gas dispositions, regulatory and guideline reforms, and through networking with other governments and industry.

Following are the actions taken to meet the Energy Strategy priorities for Yukon's oil and gas resources:

Support strategic opportunities to replace imported diesel fuel with Yukon's oil and gas resources.
➢ EMR's Oil and Gas Branch monitors private sector interest and activities, and continues to meet with industry partners to provide advice and respond to information requests. EMR's Oil and Gas Branch: • has issued well licences and signed benefits agreements with First Nations and industry to advance delineation of Eagle Plain oil and gas reserves. • is researching and assessing how to best foster the development of Eagle Plain oil and gas reserves. • is engaging industry and other key stakeholders on how to support strategic opportunities to replace imported diesel fuel with Yukon's oil and gas resources. • continues to promote "access to gas" as one of its seven strategic interests in discussions with the pipeline proponents and other major stakeholders.
Develop a competitive and comprehensive oil and gas regulatory regime, which will emphasize performance-based compliance through the establishment of new pipeline regulations under the *Oil and Gas Act*.
➢ Legislative work to modernize the *Yukon Oil and Gas Act* (YOGA) and its regulations will continue in 2011.
➢ New best practices guidelines affecting caribou, trappers and wetlands are under development. EMR is also updating the seismic best practices guidelines and developing best practices for minimizing greenhouse gas emissions in the oil and gas sector.

Prepare for northern pipeline development such as the Alaska Highway Pipeline.
➢ EMR's Oil and Gas Resources Branch is in ongoing discussions with pipeline proponents and key stakeholders to ensure Yukon's seven strategic interests are met through the planning, regulatory review, construction and operation phases of a northern pipeline. Benefit agreement negotiations between developers and First Nations are also supported by the branch through capacity building, education and training for Yukoners.
Promote private sector investment in the development of Yukon's oil and gas resources.
➢ EMR issues and manages oil and gas rights. The department also participates in North American trade shows to attract investment, and provides geological and resource related information to developers.
Finalize and implement an agreement with the federal government for sharing management and revenues for offshore oil and gas.
➢ The Government of Yukon continues to implement the 2008 EMR-Indian and Northern Affairs Canada Offshore Memorandum of Understanding and the Canada-Yukon Oil and Gas Accord, which enhances Yukon's role in offshore oil and gas management.
➢ The Government of Yukon continues to work with Canada, the Government of the Northwest Territories, the National Energy Board and the Inuvialuit to review arctic safety and environmental offshore drilling requirements to complete the Beaufort Regional Environmental Assessment, and to implement the Integrated Ocean Management Plan for the Beaufort Sea.
➢ The Government of Yukon continues to have discussions with industry to ensure Yukon's offshore interests, particularly those related to economic benefits, are adequately addressed.

Energy Choices

The Energy Strategy outlined actions to prioritize energy choices to set long term direction and define short term priorities for the Government of Yukon. Research is underway to ensure the Government of Yukon prioritizes energy choices for the short and long terms.

Following is the status of actions to meet the priorities for making energy choices.

Assess new and existing energy sources that could be developed in Yukon.
➢ Research is underway to consider the economic, environmental, and social implications of various energy sources. A report will be prepared that includes a template of how to assess the costs/benefits when considering the economic, environmental, and social implications of new energy sources.
Hold public consultation on a policy framework for coal bed methane, coal and nuclear power before permitting any development.
➢ The Government of Yukon is not proceeding with coal bed methane, coal, and nuclear power policy development or permitting at this time.
Monitor implementation of the Energy Strategy and report regularly on progress.
➢ This is the first progress report. Implementation leads across the Government of Yukon will continue to meet quarterly and keep abreast of priority action item implementation in order to report on progress every two years.

Conclusion

The next progress report will be released by the end of 2012. In the interim, the Government of Yukon will continue to monitor the implementation of this Energy Strategy, and will continue to communicate with Yukon citizens in order to meet our Energy Strategy vision.

Enquiries about this progress report or the implementation of the Energy Strategy can be directed to:

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